

CLAIMS

1. A system, especially adapted for high-power motors comprising at least one rotor (1a ; 1b) and means (4a, 4b ; 5a, 5b) comprising active elements (7, 8) capable of rotating the rotor(s) (1a ; 1b) by their
 5 synchronized deformation, said rotating means of the rotor(s) comprising at least one petal (6) comprising a hot top (11), characterized in that the material of each hot top (11) is such as that it has a mass thermal capacity (C_p^{22C}) of greater than 0.35 [J/g/K], and / or
 10 the material of each rotor (1a ; 1b) is such that it has a thermal capacity of greater than 2 [J/cm³/K].

2. The system according to Claim 1, characterized in that each hot top (11) has a mass thermal mass capacity
 15 greater than 0.5 [J/g/K].

3. The system according to Claims 1 or 2, characterized in that the thermal capacity of each rotor (1a ; 1b) is greater than 2.5 [J/cm³/K].
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4. The system according to Claims 1 to 3, characterized in that the material of each hot top (11) and each rotor (1a ; 1b), this material being uncoated, comprised of :

- 25 - (Ti, Mo) (C, N) + 8 - 20 % bonding Ni/Mo (TM 8, 10, 20 grades) ; and / or
 - WC - 6Ni ; and / or
 - zirconium reinforced aluminum (ZTA, ZTPA) ; and
 or
 30 - AlN ; and / or

- silicon carbide infiltrated with silicon SiSiC , with 8 - 20 % by weight of silicon.

5. The system according to one of Claims 1 to 4, characterized in that the material of each hot top (11) is comprised of :

- $\text{MgO} - \text{ZrO}_2$, and / or
- aluminum reinforced with zirconia (ZTA, ZTPA), and / or
- 10 - hot sintered aluminum nitrate HIP-AIN, and / or
- pressure sintered aluminum nitrate GPS-AIN, and / or
- a Magneli phase ($\text{Ti}_n\text{O}_{2n-1}$, $4 \leq n \leq 10$ with n being an integer, or the 40 % Ti_4O_7 / 60 % Ti_5O_9 type mixtures).

15 6. The system according to one of Claims 1 to 3, characterized in that the material of each hot top (11) and each rotor (1a ; 1b) is coated by thermal spraying using a material comprising :

- Magneli phases ($\text{Ti}_n\text{O}_{2n-1}$, $4 \leq n \leq 10$ with n being an integer, or the 40 % Ti_4O_7 / 60 % Ti_5O_9 type mixtures) ;
- 20 - $\text{WC} - 17\% \text{Co}$; and / or
- (Ti, Mo) (C, N) or (Ti, W) (C, N) + bonding Ni/Mo ; and / or
- 25 - $>75\% \text{Cr}_3\text{C}_2$ / $<15\% \text{NiCr}$; and / or
- $4 - 6\text{Al}_2\text{O}_3$ / $6 - 4\text{TiO}_2$.

7. The system according to Claim 6, characterized in that the material of each hot top (11) comprises :

- 30 - globular gray cast iron and / or lamellar gray cast iron and / or with an austempering and / or alloyed with Cr, Mo, Al, V, Ti ; and or

- Steels (z6CND16-05-01) ; and / or
- X5CrNiCu15-5 steels ; and / or
- AlSi + SiC/Al₂SO₃ ; and / or
- AlSi + dispersoids Al₄C₃ / Al₂O₃ / TiB₂ alloys ;
- 5 and or
- Al - Fe - V alloys ; and / or
- Series 6xxx aluminum in T6 and greater and 7xxx series ; and / or
- silicon carbide infiltrated with silicon SiSiC ;
- 10 and / or
- Titanium alloys, UNS R5xxxx, such as TiAl6V4.

8. The system according to Claim 6, characterized in that the hard layers deposited by thermal spraying must
 15 be machined to the final roughness of R_a (arithmetic roughness) of less than 0.04 μm, the thickness of the machined layers being greater than 50 μm.

9. The system according to Claim 6, characterized in
 20 that the values of roughness R_{pk} and R_{vk} of the DIN NUMERIC ENTRY WORD ISO 13565 - 2 :1998 norm are less than 0.030 μm and 0.070 μm, respectively.

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